Virginia Center *for* Transportation
INNOVATION & RESEARCH

We bring innovation to transportation.

Overview of Asphalt Research Program

Michael M. Sprinkel P.E.
Associate Director

Highly Polymer Modified Binder

Ben Bowers

- Polymer modified binder increases elasticity and performance
- Traditionally allow up to 2.5-3.5% polymer by weight
- New polymer allows for 7.5% polymer by weight, increasing elasticity
- May help performance
  - Reflective crack mitigation
  - Rutting resistance
  - Thin-lift applications
  - Longer lasting pavement

Binder photo credit: VAA

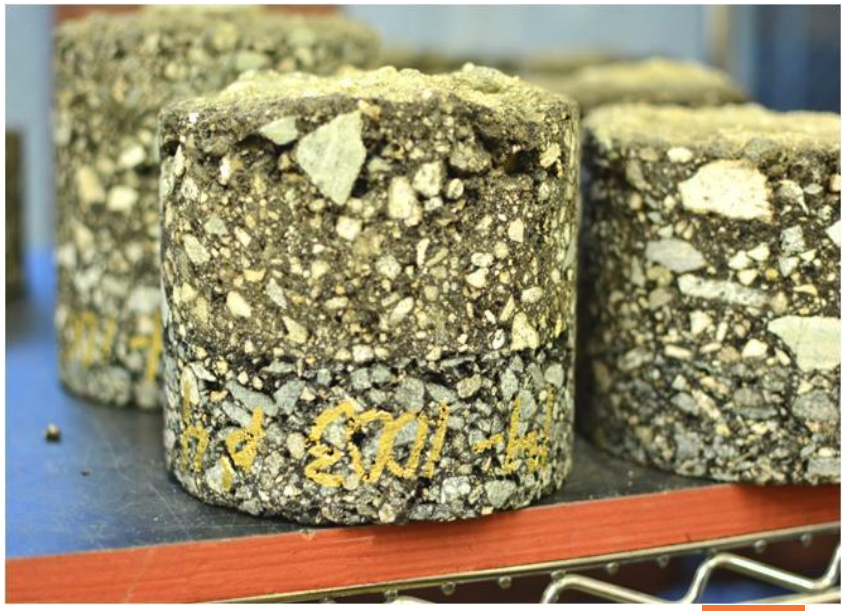
Highly Polymer Modified Binder

- 7.5% being polymer asphalt mixture was placed in Northern Virginia District on 8/28/2014
- No major changes to construction process
- Lab testing being conducted at VCTIR
  - Preliminary test results are promising
- Already looking at two future projects

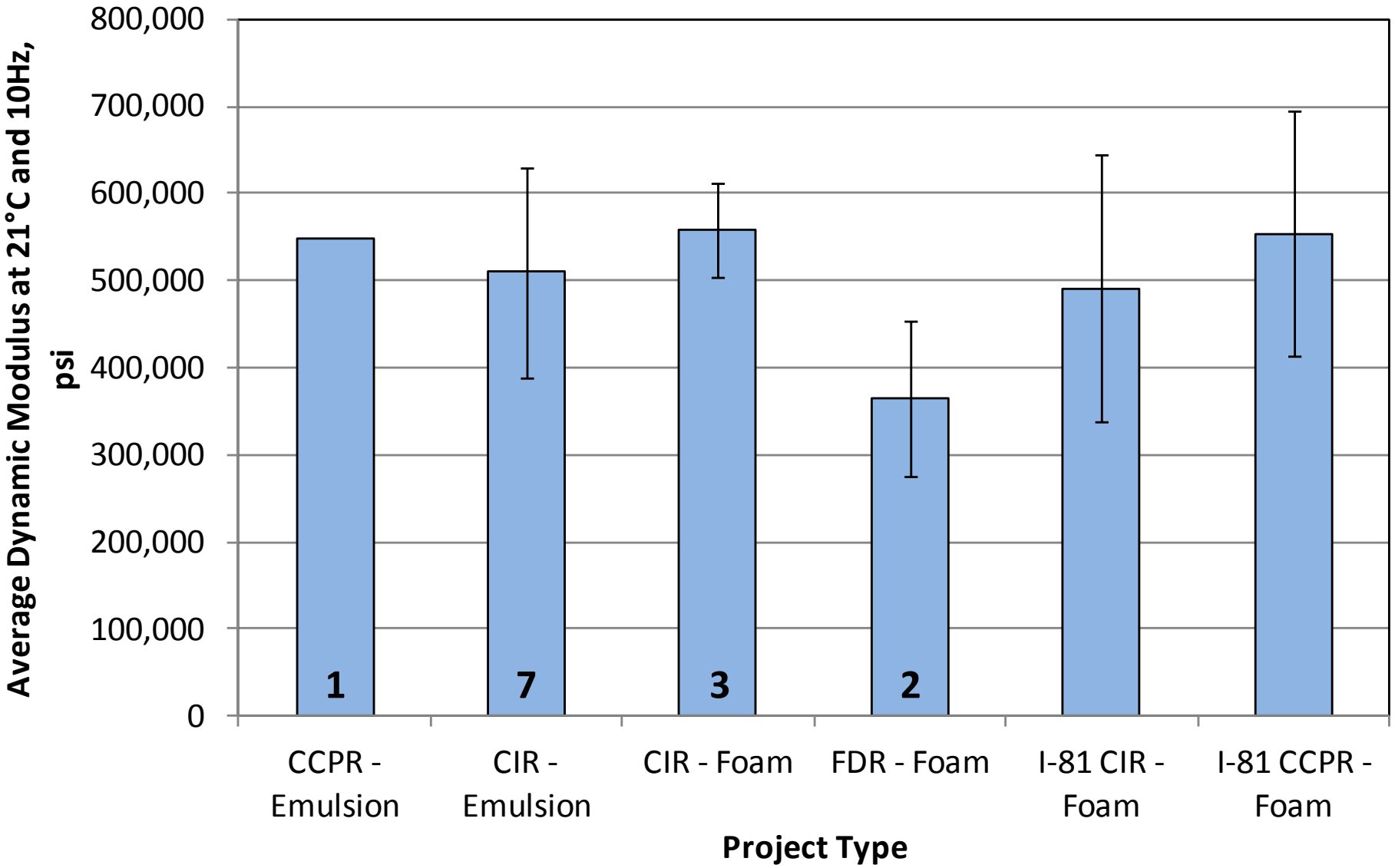
NCHRP 9-51

Brian Diefenderfer

- *Material Properties of CIR and FDR for Pavement Design*
- Partners
  - University of MD, VDOT, Colas Solutions, Wirtgen
- Project locations (22)
  - **California, Colorado, Delaware, Edmonton, Georgia, Illinois, Kansas, New York, Ontario, Utah, Washington, West Virginia**



Example Results



Influence of Aggregate Morphology & Grading on Performance of Small-Size SMA Mixtures

Steve Lane, Hari Nair, Linbing Wang

- Goal: Examine grading specs for the design of small-size SMA mixtures and the impact of aggregate morphology on the structural stability of the mixture
- Characterize aggregate particle shape, angularity, and surface texture
  - Apply LADAR (laser-based imaging) system
  - Comparison with conventional methods
- Mixture stability evaluation
  - Model-mobile loading simulator (MMLS3), fatigue testing, dynamic modulus and flow number

Aggregate Morphology/Grading – “Small-Size” SMA

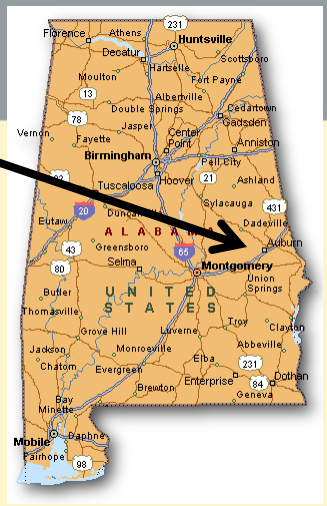
Quiet(er) Pavements (Code of Virginia § 33.1-223.2:21)

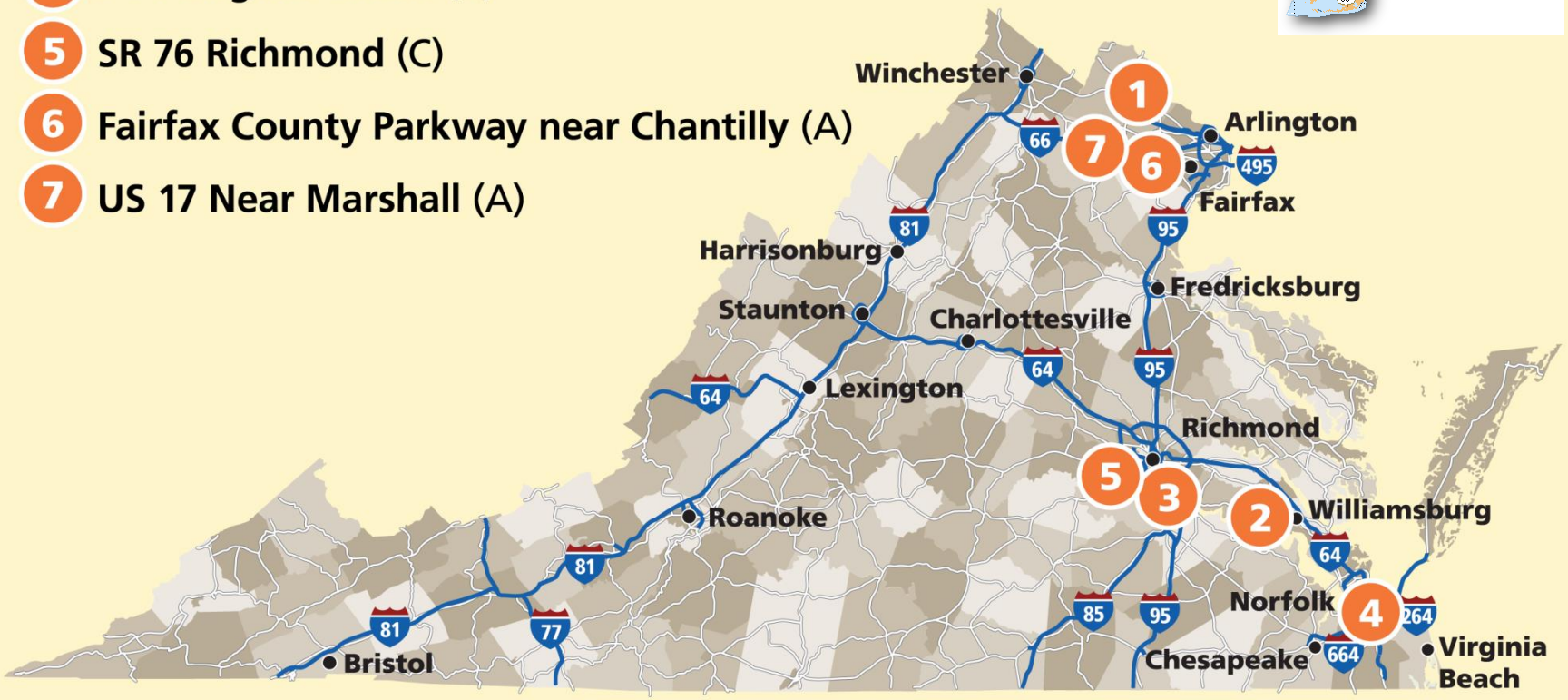
Kevin McGhee

Demonstration Projects 2011/12

1. SR 7 By-Pass in Leesburg (A)
2. SR199 west of Williamsburg (A)
3. SR 288 near Chester (A)
4. I-64 Virginia Beach (C)
5. SR 76 Richmond (C)
6. Fairfax County Parkway near Chantilly (A)
7. US 17 Near Marshall (A)

8 NCAT

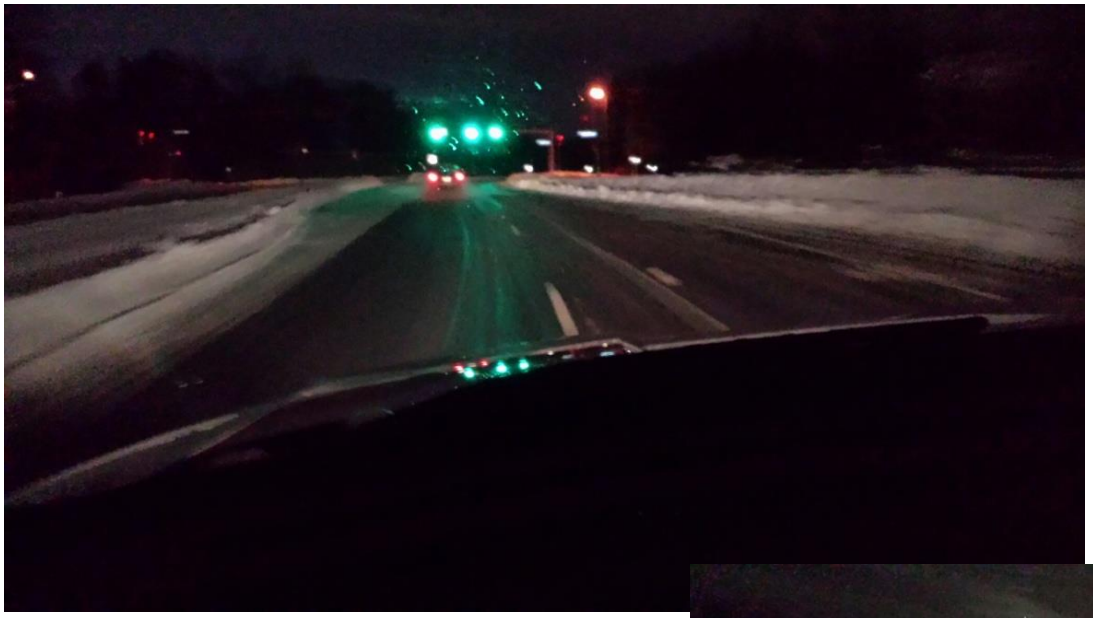




Tire/Pavement Noise

- Difference between lowest-noise QP and control surfaces:
  - After first winter tire-pavement noise levels were readily noticeable (≥ 5dB); asphalt & concrete
- Over past two winters, noise intensity levels have:
  - decreased slightly for concrete technologies
  - increased slightly for asphalt technologies

Quiet Pavement – Winter



SMA

Quiet Pavement

Feb 2014

Quiet Pavement – Wet Weather

SMA

Quiet Pavement

May 2014

Final Report – June 2015

- To include (Virginia Code):
  - *"…a plan for routine implementation of quiet pavement…"*
- To include (Objective Evaluation):
  - Expected performance – noise reduction and its duration, friction, etc.
  - Expected costs – material, maintenance (winter & other), and safety
  - Recommended use and other considerations

Support for AQTF

Title:

AN ASSESSMENT OF INCENTIVE-ONLY RIDE SPECIFICATION FOR ASPHALT PAVEMENTS

Research Team:

Harikrishnan Nair, Kevin K. McGhee, and Affan Habib

Objective:

Document and critically review the pilot application of the incentive only provision for rideability on selected asphalt resurfacing schedules for the 2013 construction season.

Thank You

Questions